

KNOW ALL ABOUT

SPACE

the
Great
Beyond!





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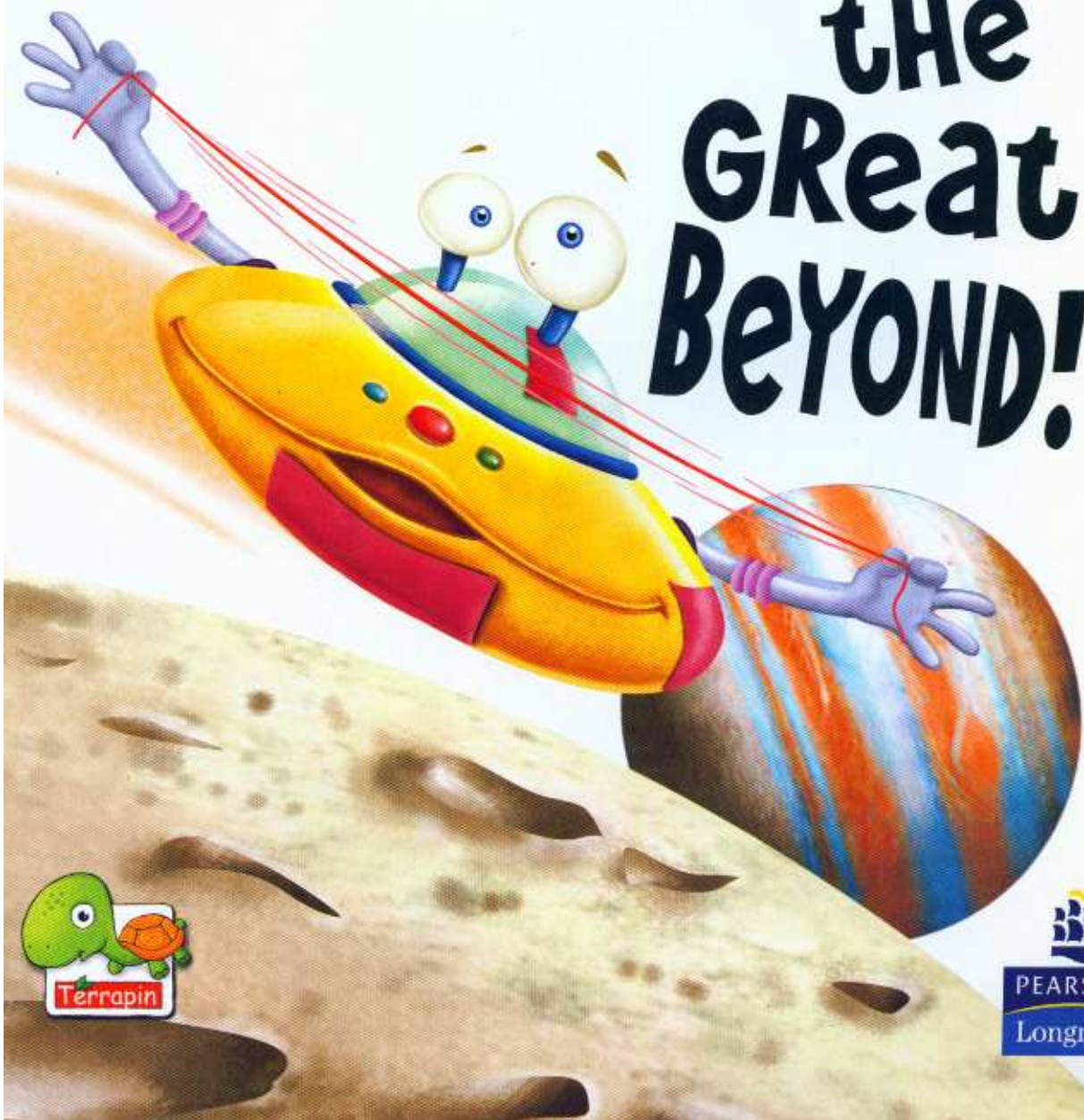
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SPACE

the
**Great
Beyond!**





Remember the last time a balloon slipped out of your hands? Did you look upwards and see it flying high up into the sky. Perhaps you thought it could not go farther than that! After all, what can be higher than the sky?

Higher than the sky!

The sky is actually layers and layers of air, or atmosphere, that surround our earth. These layers get thinner and thinner as we go up. At about four hundred kilometres from the earth, there is no longer any air. But that does not mean that all things end there. That is just the beginning!





Have you ever wondered how big the sky is? So have scientists. They have measured the sky and are now unravelling the mysteries of outer space.

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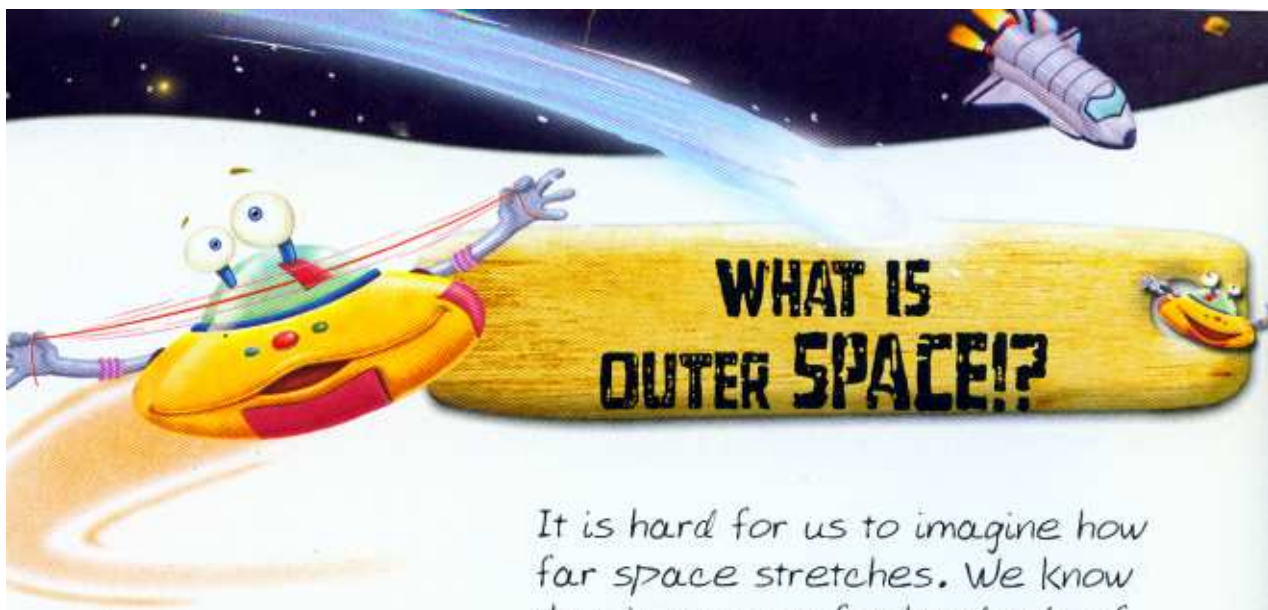
The beginning!

From here begins a fascinating world that is full of bright and beautiful things and is full of mystery—outer space. It is so big that we still don't know everything about it, but every day, we learn something new!

FUNNEE



Long ago, people thought that the sky was made of glass! They believed that the earth was inside a glass ball, and if they climbed a high mountain, they could touch the glass sky!



WHAT IS OUTER SPACE!?

It is hard for us to imagine how far space stretches. We know that it goes on for hundreds of millions of light years.

Light years

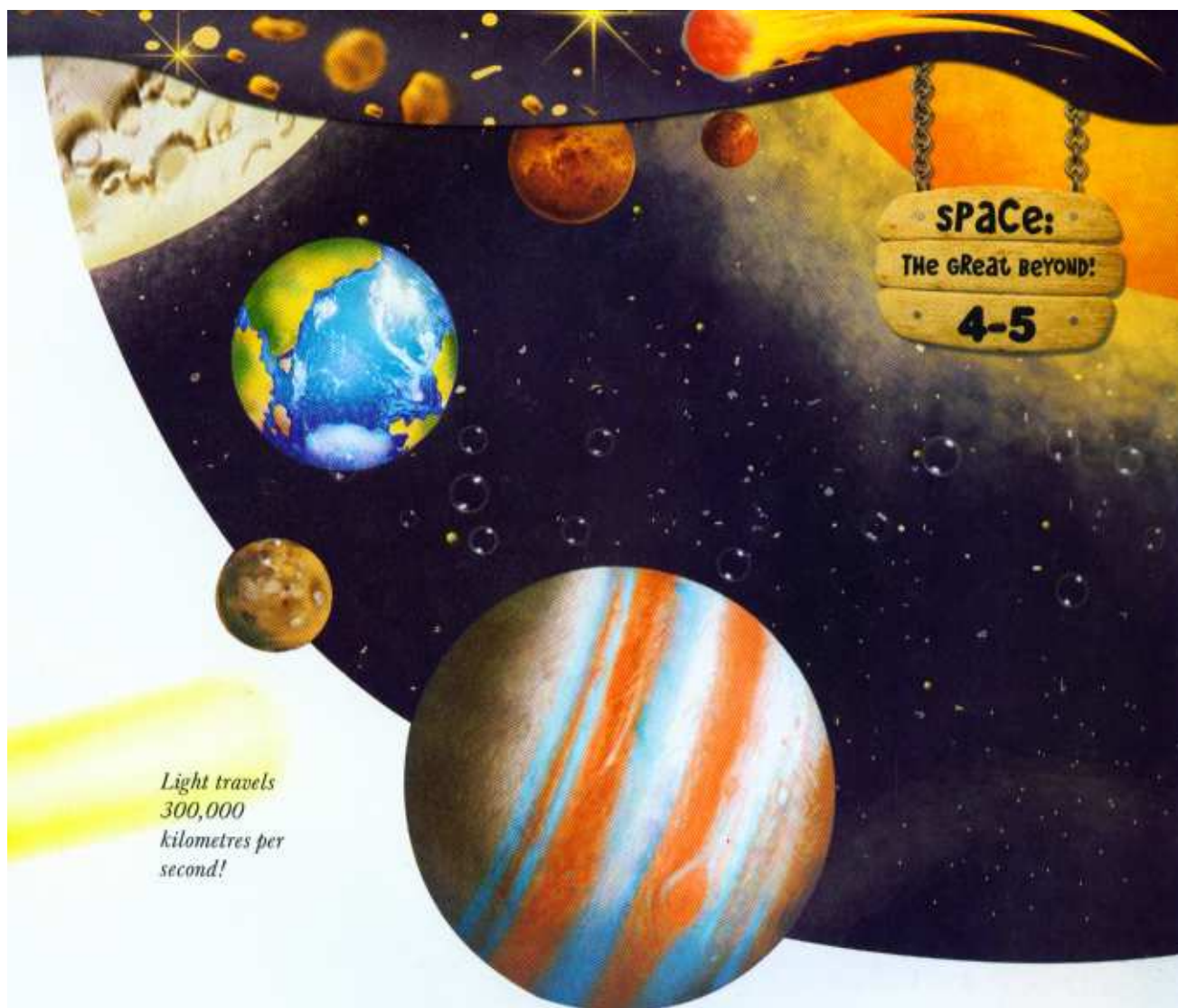
A light year is a unit of measurement, used for measuring distances in space. In one year, light travels a distance of ten trillion kilometres! So one light year is equal to ten trillion kilometres!

Now when we say that outer space extends for hundreds of millions of light years, can you imagine how far that is!

A snail travels about half a centimetre per second!



The fastest plane can travel at more than three kilometres per second!



*Light travels
300,000
kilometres per
second!*

DID YOU KNOW?



Only seven per cent of light reflected by the moon reaches the earth, yet it makes our nights so much brighter!

Night or day?

In outer space, there is no night or day. Stars shine even when it is day in our world. Space is mostly dark, but light shines from stars and planets. Stars make their own light, while planets and moons only reflect that light.



Even in the vast outer space, we have a neighbourhood and a local group! Our Earth is part of a group of planets that go around the sun. This 'neighbourhood' is known as the solar system. Besides the planets, the solar system has moons, comets, asteroids, dwarf planets, dust, and gas.

Comet

A comet is made up of chunks of rocks and gases that have frozen together. As it nears the sun, parts of the comet begin to thaw, or melt, and turn into gas. That is how a comet's tail is formed! A comet can take hundreds of years to go around the sun!



Asteroids

An asteroid is a large rocky object that orbits the sun. Some scientists believe that long ago, one of these asteroids crashed into the earth and caused the extinction of dinosaurs!



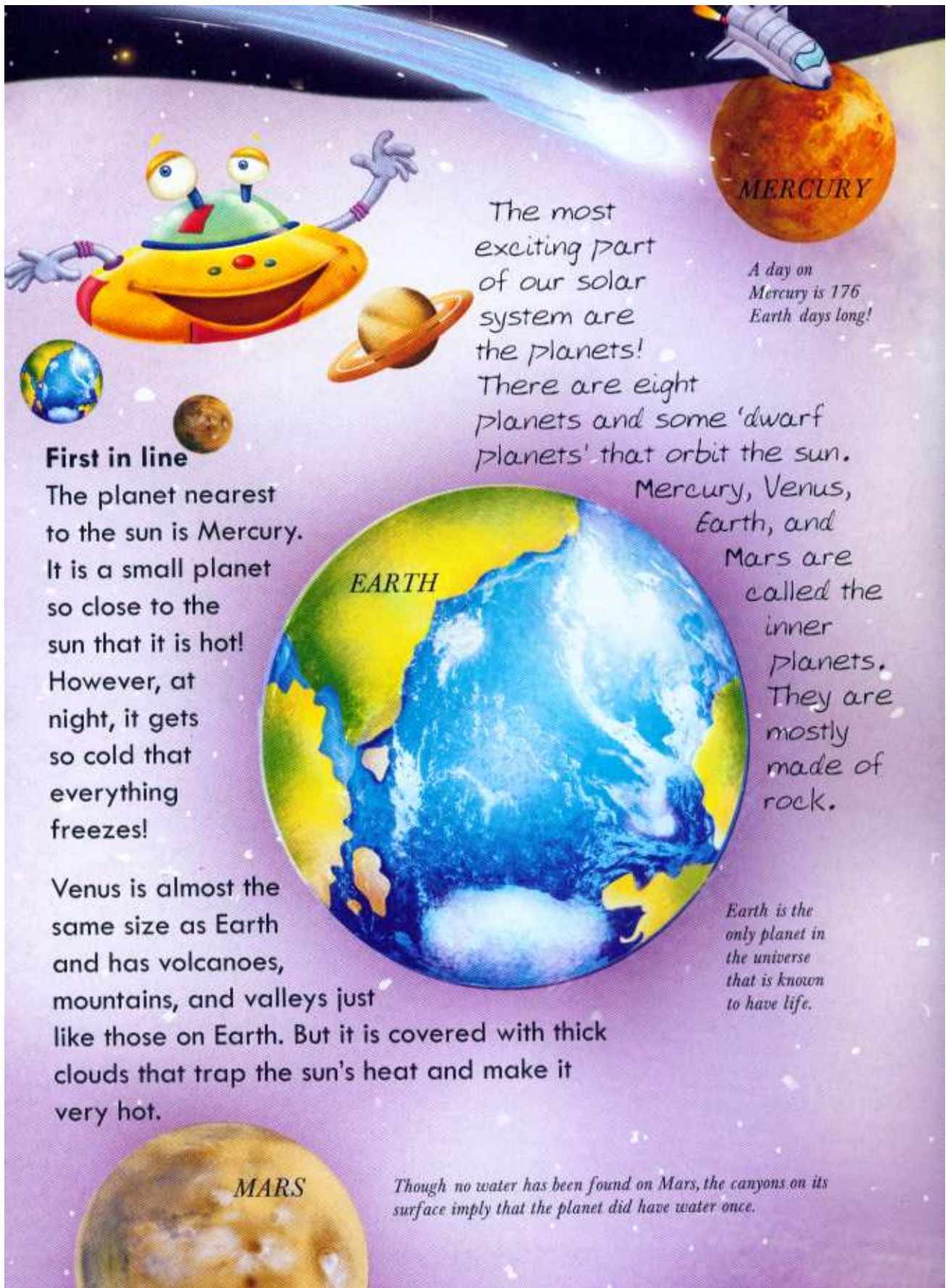
Scientists believe that 90,000 asteroids orbit around the sun in a tightly packed belt. This asteroid belt is located between Mars and Jupiter.

Did You Know?



Your parents might have actually seen a comet! Halley's Comet passed by Earth in 1986. The next time that this comet streaks past us will be in 2061.

Ancient Greeks thought that the sun, moon, and other planets moved around the earth. Actually, the earth, as well as the moon and other planets, revolves around the sun!



MERCURY

*A day on
Mercury is 176
Earth days long!*

The most
exciting part
of our solar
system are
the planets!

There are eight
planets and some 'dwarf
planets' that orbit the sun.

Mercury, Venus,
Earth, and
Mars are
called the
inner
planets.
They are
mostly
made of
rock.

First in line

The planet nearest
to the sun is Mercury.
It is a small planet
so close to the
sun that it is hot!
However, at
night, it gets
so cold that
everything
freezes!

Venus is almost the
same size as Earth
and has volcanoes,
mountains, and valleys just
like those on Earth. But it is covered with thick
clouds that trap the sun's heat and make it
very hot.

*Earth is the
only planet in
the universe
that is known
to have life.*

MARS

*Though no water has been found on Mars, the canyons on its
surface imply that the planet did have water once.*

PLANETS

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THE GREAT BEYOND!

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The core of Venus gets so hot that once in a few hundred million years, the entire surface melts and becomes an ocean of lava!

VENUS

Third rock

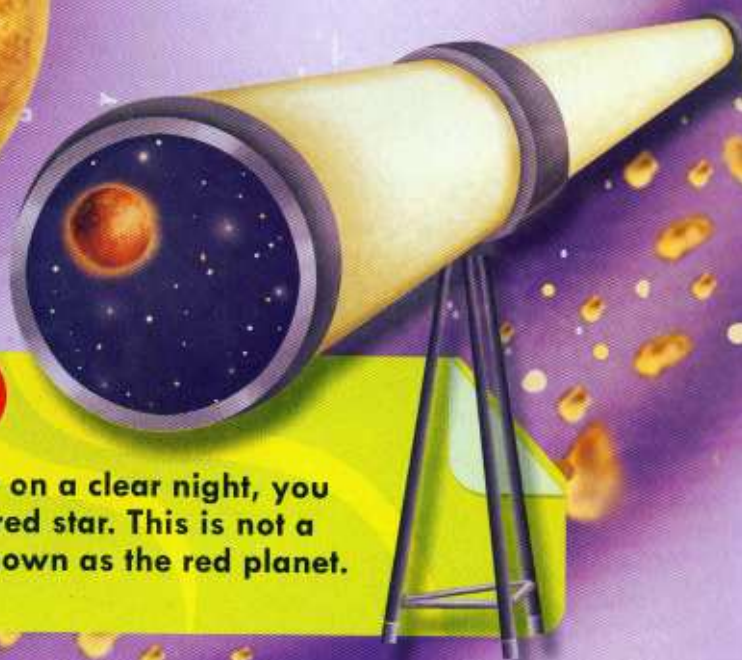
The third planet from the sun is our very own planet Earth!

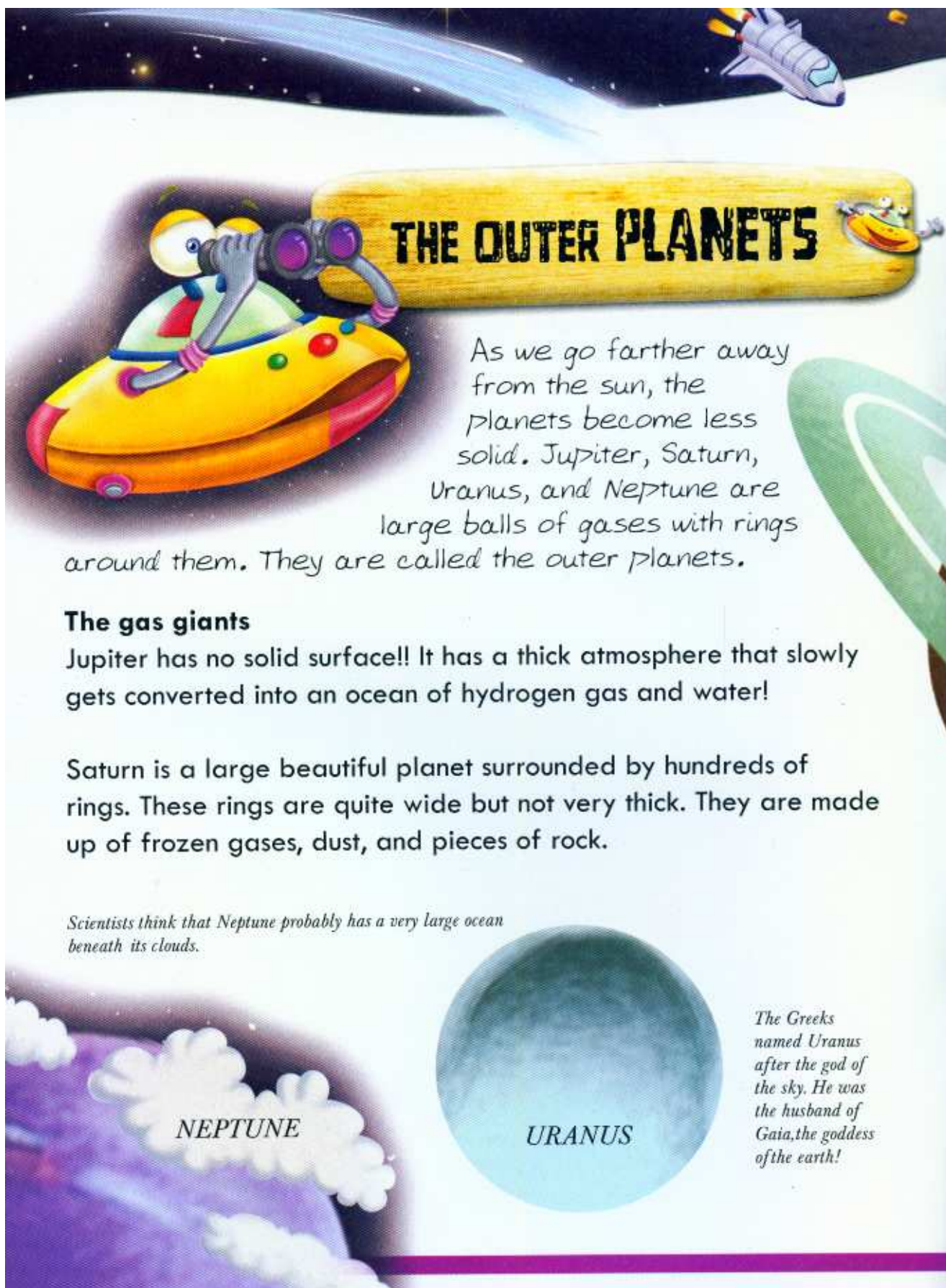
Mars is closest to Earth and more like it than any other planet. It has high mountains, volcanoes and deep canyons.

DID YOU KNOW



If you look at the sky on a clear night, you will be able to see a red star. This is not a star but Mars, also known as the red planet.





THE OUTER PLANETS

As we go farther away from the sun, the planets become less solid. Jupiter, Saturn, Uranus, and Neptune are large balls of gases with rings around them. They are called the outer planets.

The gas giants

Jupiter has no solid surface!! It has a thick atmosphere that slowly gets converted into an ocean of hydrogen gas and water!

Saturn is a large beautiful planet surrounded by hundreds of rings. These rings are quite wide but not very thick. They are made up of frozen gases, dust, and pieces of rock.

Scientists think that Neptune probably has a very large ocean beneath its clouds.

NEPTUNE

URANUS

The Greeks named Uranus after the god of the sky. He was the husband of Gaia, the goddess of the earth!



Galileo Galilei, the Italian astronomer, was the first to spot Saturn through a telescope in 1610.

SATURN

Jupiter is the largest planet in our solar system. It is so big that 330 Earths could fit into it!

JUPITER

DID YOU KNOW?



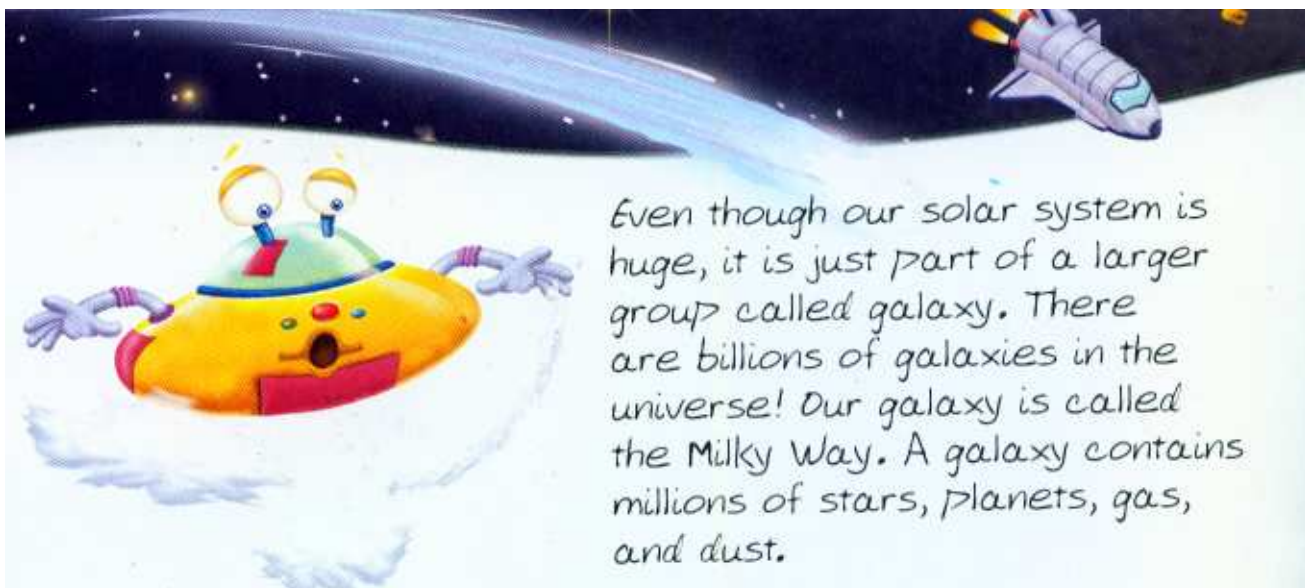
It is believed that Uranus may have millions of large diamonds!

So far away

Uranus spins on its side! Scientists think that something huge crashed into Uranus and completely changed the direction of its spin!

Neptune is so far away that very little is known about it.

Pluto, Ceres, and Eris are dwarf planets in our solar system.

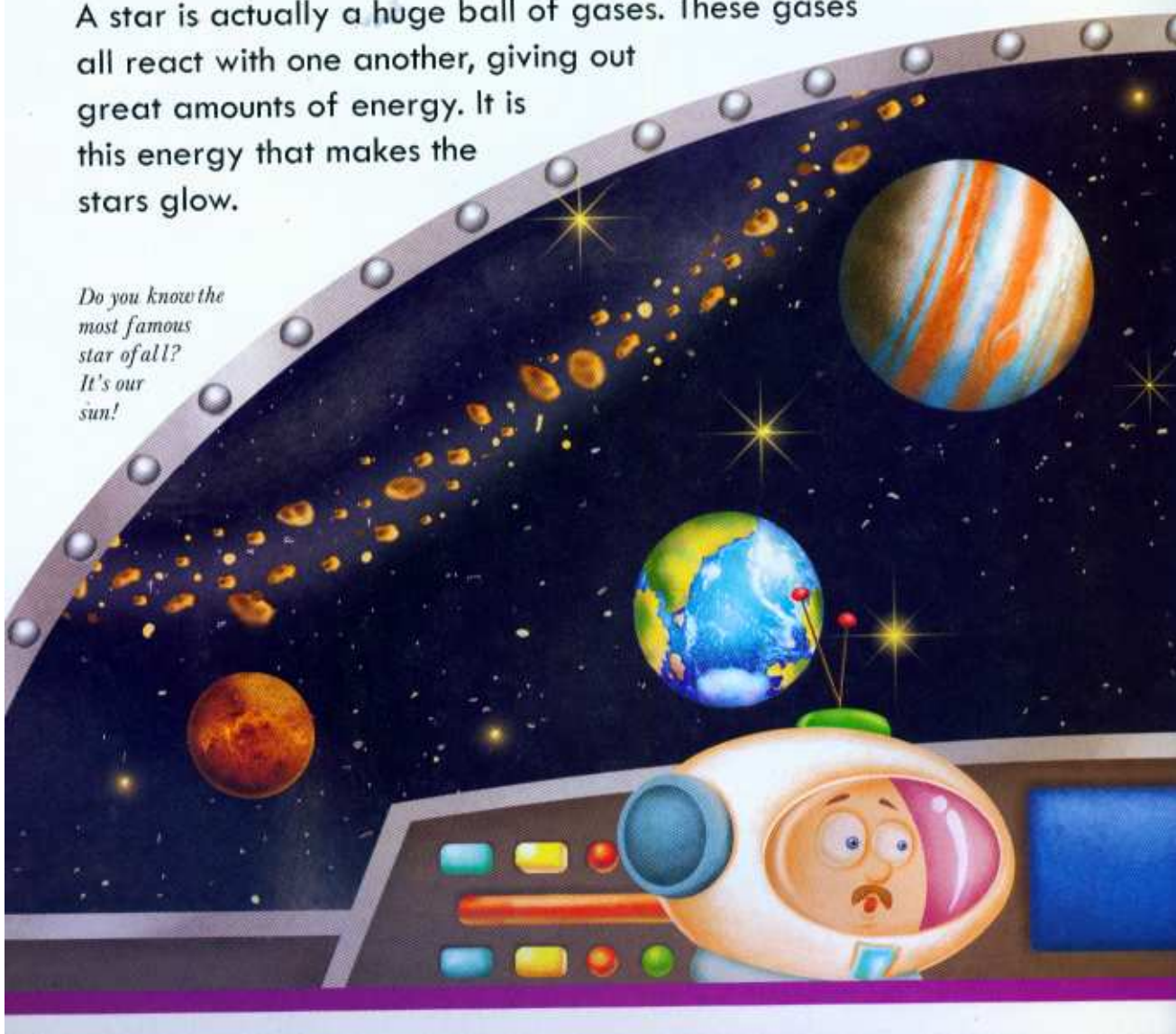


Even though our solar system is huge, it is just part of a larger group called galaxy. There are billions of galaxies in the universe! Our galaxy is called the Milky Way. A galaxy contains millions of stars, planets, gas, and dust.

Fiery gas balls

A star is actually a huge ball of gases. These gases all react with one another, giving out great amounts of energy. It is this energy that makes the stars glow.

*Do you know the
most famous
star of all?
It's our
sun!*





OF STARS AND GALAXIES

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Counting stars...

No one knows exactly how many stars there are in the universe. If you were to count stars on a clear night, you might be able to count up to 2,000! Actually, more than 7,000 stars are visible from the earth without a telescope!

DID YOU KNOW



Stars do not twinkle. They simply shine. When starlight enters the earth's atmosphere – the blanket of air that surrounds the earth – it bends many times. We see this 'shaking' starlight and think that the stars are twinkling!





EXPLORING SPACE

Space is so far away! How do we know so much about it?

The first step

In 1608, the telescope was invented. It made faraway things look closer and larger. This was our first step in space exploration and changed everything we knew about the universe.

In April 1961, Yuri Gagarin, the Soviet cosmonaut, was the first human to go into space.

Since its was founded in 1958, National Aeronautics and Space Administration (NASA) has become the pioneer in space travel and research.

Space walk

We have been able to send satellites, rockets, space shuttles, and even people into outer space! In 1969, Neil Armstrong and Edwin Aldrin landed on the moon...and came back safely. Since then, many astronauts have visited space and brought back information about it.



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Life on Mars?

Since Mars is closest to Earth in distance as well as nature, people think that there could be life on Mars. Spaceships to Mars have brought back pictures of a dusty, red planet. But so far, no life has been spotted.

In 1957, the Russian satellite Sputnik became the first man-made object ever to be launched into space.

Did You Know



In 2004, Mike Melvill became the first private citizen to fly into Earth's orbit. Soon, more and more people will be able to go into space. And who knows? Maybe, you will be one of them!





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POLLUTION IN SPACE!



While we are busy exploring our universe and finding out new things about it, we are also doing something terrible to our space. We are making it dirty.

So much litter

Many countries send up satellites and rockets but don't bring them back. USSR abandoned twenty-six satellites in space between 1997 and 2003! China and some American companies left a large amount of garbage in space.

Some space missions fail and their pieces fall off one by one in different areas of the space.

Time to clean up

So, space now has pieces of metal that are flying around at great speeds, and we have no way of controlling them. They can damage an active satellite or even hurt an astronaut!

Maybe when you grow up, you can find a way of cleaning up the space!

Believe it or not!

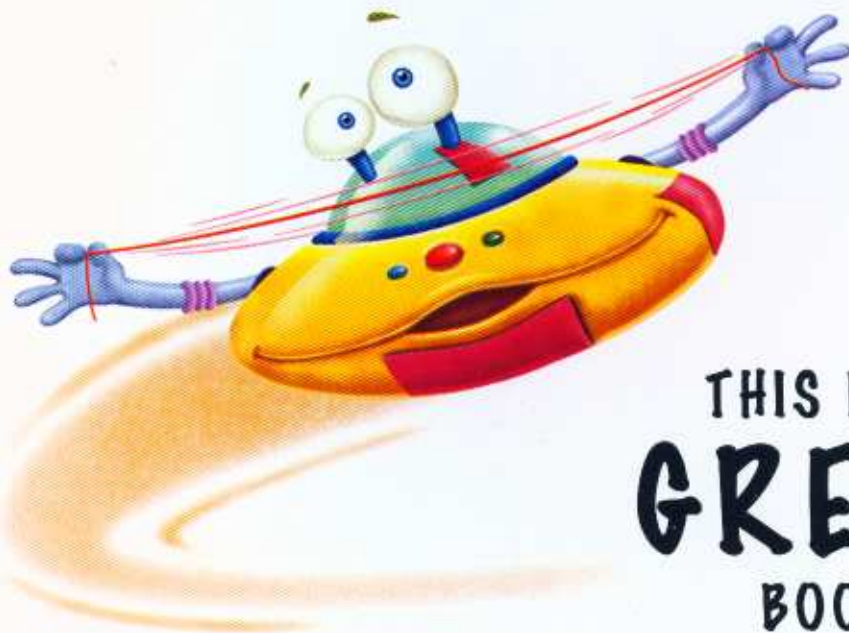
Skylab, an American space station, came crashing back to the earth in 1979. Luckily, most of it landed in the Indian Ocean, but some parts fell on small towns in Australia!



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THIS IS A
GREEN
BOOK

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SPACE

the Great Beyond!

Did you know that stars do not twinkle? And, the shiniest star in the sky is not a star at all!! Did you know that if you went to planet Jupiter, you would have nothing to stand on... it does not have any land?!

Read about these, and discover many more fascinating facts about outer space!

Other books in this series:

Sun: The Great Ball of Fire!

Wind: The Air in a Hurry!

Water: The Big Splash!

Soil: The Precious Earth!

Earth: The Blue Marvel!

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